Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Redesignation of the 17.7-19.7 GHz Frequency	)	
Band, Blanket Licensing of Satellite	)	IBM Docket No. 98-172
Earth Stations in the 17.7-20.2 GHz and	)	RM-9005
27.5-30.0 GHz Frequency Bands,	)	RM-9118
and the Allocation of Additional Spectrum	)	
in the 17.3-17.8 GHz and 24.75-25.25 GHz	)	
Frequency Bands for Broadcast Satellite-	)	
Service Use	)	

To: The Commission

COMMENTS OF SKYBRIDGE L.L.C.

SkyBridge L.L.C. ("SkyBridge"), by its attorneys, submits these comments in response to the Commission's Notice of Proposed Rulemaking in the above-captioned matter (the "NPRM").[1/]

SkyBridge has on file with the Commission an application (the "SkyBridge Application") for authority to launch and operate the "SkyBridge System," a global network of nongeostationary orbit ("NGSO") communications satellites operating at Ku-band, designed to provide broadband services in the Fixed-Satellite Service ("FSS").[2/] SkyBridge proposes to operate its "Gateway" earth

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1/ FCC 98-235, released September 18, 1998.

2/ In the Matter of the Application of SkyBridge L.C.C. for Authority to Launch and Operate a Global Network of Low Earth Orbit Communications Satellites
(continued...)

stations in the 17.3-17.8 GHz band, a subject of the NPRM. In addition, SkyBridge has on file an application for a follow-on Ka-band system (the "SkyBridge II System"), which will operate in the 17.8-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz bands, which also are included in the NPRM.[3/]

I. ALLOCATION OF 17.3-17.8 GHz FOR BSS

In the NPRM, the Commission proposes to allocate the 17.3-17.8 GHz band to the Broadcasting-Satellite Service ("BSS"), for downlinks, effective April 1, 2007. This proposal is in response to a Petition for Rulemaking (the "DirecTV Petition") filed by DirecTV Enterprises, Inc. ("DirecTV") on June 5, 1997,[4/] which sought access to the 17.3-17.8 GHz band for Direct Broadcast Satellite ("DBS") expansion. The Petition was filed in conjunction with an application (the "DirecTV Application") requesting authority to construct, launch and operate an expansion system of six direct broadcast satellites.[5/]

[2/] (...continued)
Providing Broadband Services in the Fixed-Satellite Service, File No. 48-SAT-P/LA-97, filed February 28, 1997; Amendment, File No. 89-SAT-AMEND-97 filed July 3, 1997; Amendment, 130-SAT-AMEND-98, filed June 30, 1998; Public Notice, Report No. SPB-141 (Nov. 2, 1998).

[3/] In the Matter of SkyBridge II L.L.C. for Authority to Launch and Operate a Global Network of Low Earth Orbit Communications Satellites Providing Broadband Services in the Fixed-Satellite Service, filed December 22, 1997.

[4/] In the Matter of the Petition of DirecTV Enterprises, Inc. to Amend Parts 2, 25 and 100 of the Commission's Rules to Allocate Spectrum for the Fixed-Satellite Service and the Broadcasting-Satellite Service, RM No. PRM97MM, filed June 5, 1997; Public Notice, Report No. 2208 (July 1, 1997).

[5/] Application of DirecTV Enterprises, Inc. for Authority to Construct, Launch and Operate an Expansion System of Direct Broadcast Satellites, File No.
(continued...)

For the reasons provided by SkyBridge in its Comments on the DirecTV Petition (and summarized below),[6] SkyBridge urges the Commission to revise its proposal to allocate now the 17.3-17.8 GHz band for BSS downlinks, with that allocation becoming effective April 1, 2007.[7] There is no rational to make such an allocation at this juncture, more than 8 years before it would have any effect. Technologies are simply evolving too rapidly to allow an accurate prediction of what will be the most efficient use of a band of spectrum in 2007.[8] Particularly in view of the spectrum sharing issues discussed below, it is premature to make any decision regarding this allocation at this time.

Under the International Table of Frequency Allocations, use of the subject band for BSS downlinks is not permitted until April 1, 2007. This future allocation was intended solely for "next generation" BSS applications, specifically,

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5/ (...continued)
75/76/77-SAT-P/LA-97, filed June 5, 1997.

6/ Comments of SkyBridge, L.L.C., RM-9118, filed July 31, 1997.

7/ In ITU Region 2, the 17.3-17.7 GHz band is currently allocated on a primary basis only to FSS uplinks. See 47 C.F.R. 2.106. The 17.7-17.8 GHz band is currently allocated on a primary basis to FSS uplinks and downlinks, and to the Fixed and Mobile Services (the latter only until April 1, 2007). Footnote S5.517 of the Radio Regulations states that, in Region 2, the 17.3-17.8 GHz band will be allocated to BSS for downlinks on a primary basis effective April 1, 2007. Pursuant to the ITU Radio Regulations, therefore, use of the 17.3-17.7 GHz band for GSO downlinks of any kind is not contemplated prior to April 1, 2007. Use of the 17.7-17.8 GHz band for GSO downlinks prior to this date is contemplated for FSS services only.

8/ Note, for example, the dramatic differences between the BSS Plan for Regions 1 and 3 as compared to that for Region 2, which were adopted six years apart.

high definition television services.[9/] Although DirecTV anticipated its expanded system would include high definition (in addition to standard) formats, DirecTV largely justified its need for the additional spectrum by proposing other services, such as data and multimedia services, for which this BSS allocation was not intended.[10/]

Furthermore, there is no shortage of BSS capacity in the U.S. A number of licensed systems have yet to be constructed (e.g., MCI's, USSB's), and there has been no showing whatsoever that existing systems have exhausted their technical capacity or that their current channel capacity is inadequate to enable DBS systems to compete with, e.g., existing cable systems.[11/]

Finally, the DirecTV proposal involves a mode of reverse-band operation that may threaten the ability of BSS systems to coexist with other geostationary orbit ("GSO"), Fixed Service ("FS"), and NGSO systems, such as SkyBridge. While the 17.3-17.8 GHz band is currently allocated primarily to FSS uplinks (see supra note 7), DirecTV proposes to introduce BSS downlinks into the band.

9/ Furthermore, as DirecTV noted, the U.S. did not support the future allocation of this band to BSS at WARC-92, arguing that any future high definition needs could be accommodated in the 12 GHz band, or if necessary, at the 24.65-25.25 GHz band. See DirecTV Petition at 4.

10/ See DirecTV Application at 4-5.

11/ Nor will the proposal further the competitiveness of United States industry in the provision of DBS satellite services. DirecTV did not propose to permit new entry into the DBS market through use of the BSS expansion spectrum; rather, it proposed to allow existing licensees to expand program offerings. DirecTV provided no showing that increasing the capacity of current DBS systems will allow DBS to be more competitive with cable and other current and future providers of video programming.

As DirecTV concedes in its Application, "[t]he DIRECTV expansion system must coexist with other satellite systems."[12/] However, while acknowledging that uplink stations at 17.3-17.8 GHz may create interference into DirecTV customer receive terminals operating in the vicinity of those stations,[13/] DirecTV fails to quantify the potential interference. Instead, in its Application, DirecTV merely asserts, without analysis, that "such cases will be limited in scope, and can be easily addressed through reasonable interference protection measures that will not burden the uplink operator."[14/]

DirecTV's true intention in this regard, however, is revealed in its contemporaneous Petition, in which DirecTV suggests that limiting uplink power levels, minimizing uplink antenna sidelobes, and deploying shielding around uplink sites represent the best way to address such interference,[15/] -- all of which would constrain the uplink operator, without any of the burden being shared by DirecTV. Thus, the cavalier assurances that appear in DirecTV's Application are completely undermined by the candid -- but flatly unacceptable -- proposal set out in the Petition to place the burden of minimizing interference from DirecTV's proposed new service on everyone but DirecTV.[16/]

12/ DirecTV Application at 44.

13/ Id.

14/ Id. (emphasis added).

15/ See DirecTV Petition at 9.

16/ By contrast, as the Commission is well aware, the SkyBridge System takes steps to enable sharing the subject band with GSO uplinks, including, inter

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Furthermore, as discussed in detail in SkyBridge's Comments on the DirecTV Petition, SkyBridge has analyzed the potential for interference in the 17.3-17.8 GHz band between BSS downlinks and the SkyBridge System, based on parameters in the DirecTV Application. The study indicates that sharing of the subject band between DirecTV and SkyBridge, or between DirecTV and another GSO or terrestrial FS system, may be quite problematic.[17/]

In response to SkyBridge's study, DirecTV expressed its belief that "interference concerns . . . can be reasonably resolved through the rulemaking process."[18/] However, rather than addressing substantively the potential for interference, DirecTV merely stated that it believes SkyBridge's assertions that

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16/ (...continued)
alia, switching off spot-beams to avoid potential interference situations, and using a specific waveform, including spreading, to limit power flux densities. As a result of these measures, SkyBridge can coexist with many services in this band, while providing data and multimedia services to individual users -- the same types of services that DirecTV proposes to provide.

17/ Comments of SkyBridge, L.L.C., RM-9118, filed July 31, 1997, at 4-6. Specifically, Appendix A of the SkyBridge Comments illustrates the very real potential for SkyBridge Gateway (or GSO uplink) interference into DirecTV consumer DBS dishes. This is the case even though the SkyBridge Gateways use fully compliant, state-of-the-art, antenna patterns and are far from being the most powerful uplink transmitters, and shielding of the Gateways with an RF fence was assumed in the analysis. Coordination to mitigate such interference appears impractical due to the ubiquitous nature of the DBS dishes, and the fact that the location of these dishes is not under the control of the DBS operator. Efficient use of orbital spectrum will not result if such systems cannot coexist in the band.

18/ Reply Comments of DirecTV Enterprises, Inc., RM No. 9118, filed August 15, 1997, at 15.

reverse band sharing may be difficult are "overly pessimistic."[19/] DirecTV stated further that it is "continuing to study this issue, and would be pleased to submit additional analysis on this point should the Commission desire it."[20/] SkyBridge is aware of no additional inputs in this regard; SkyBridge's analysis remain unrefuted.

Given the Commission's proposal to delay the potential entry of BSS downlinks in the band until at least 2007, there is ample time to study these sharing issues, and develop a policy for efficient use of the spectrum. Thus, there is no rational reason for adopting an allocation for BSS downlinks at this time.

II. REDESIGNATION OF THE 17.7-20.2 GHz BANDS

In the NPRM, the Commission tentatively concludes that FS stations and ubiquitously-deployed satellite earth stations cannot effectively share spectrum, and therefore proposes a new band plan separating such operations. On the other hand, the Commission concludes that sharing among FS stations and certain non-ubiquitous FSS earth stations is possible, and proposes to permit co-primary use of some bands by both services.[21/]

As the Commission is aware, this is precisely the approach SkyBridge has advocated in the Ku-band for some time. SkyBridge has designed its NGSO FSS system to avoid use of ubiquitous user terminals in bands heavily used by FS stations

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19/ Id. at 17.

20/ Id. at 18.

21/ NPRM at 12 and 16.

in the U.S., using those bands only for deployment of its "gateway" earth stations, so that the system will not overly burden FS operators.[22/]

The Commission appears to have a similar approach in mind for the Ka-band. As the Commission correctly notes, "[s]haring between the terrestrial fixed service and . . . non-ubiquitous satellite operations is feasible because the number of satellite earth stations is not large, because [the Commission is] not proposing blanket licensing in these bands, and because their locations will be known."[23/] SkyBridge agrees with the Commission that, under these conditions, "current coordination criteria and sharing principles between satellite earth station and terrestrial fixed service operations can be used."[24/]

Wisely, the Commission does not propose technical constraints on the sort of gateway earth stations that would be permitted to co-exist with FS operations, relying instead on the absence of blanket licensing, and the need to coordinate with FS stations, to govern earth station deployment in these bands.[25/] While it may be the case that, as the Commission hypothesizes, many of these gateways will use relatively

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22/ See Amendment to SkyBridge Application, File No. 89-SAT-AMEND-97, filed July 3, 1997, Appendix C, Sections II and III; Opposition of SkyBridge to Petitions to Deny SkyBridge's Application, filed February 20, 1998, at 62-76.

23/ NPRM at 12.

24/ Id.

25/ The FCC also notes that downlink pfd limits applicable in the remaining shared portion of the 18 GHz band -- to protect passive Earth Exploration-Satellite and Space Research operations -- may require higher gain earth station antennas, further restricting the types of earth stations in the band. See NPRM at 16.

large diameter antenna,[26] mandating the use of any particular type of equipment most likely would impede the development of new technologies and result in economic inefficiencies.

These sorts of practical measures, which do not unnecessarily constrain technical and economic solutions to evolving marketplace problems faced by satellite operators, should be more than adequate to protect FS licensees, who rightly seek reasonable assurance that the deployment of new earth stations will not unduly burden future FS expansion. To the extent that the Commission finds that further assurances in this regard are needed, SkyBridge proposes adoption of a definition based on the function of a gateway, i.e., to connect multiple end-users, via satellite, to terrestrial networks. This would ensure that "gateways" are not used by end-users, thus limiting their number, without placing undue technical constraints or economic burdens on the satellite operators.

CONCLUSION

Allocation of the 17.3-17.8 GHz band to BSS downlinks at this time is premature, and not necessary for promoting the DBS industry in the United States. Such a rule change at this time may inhibit efficient spectrum utilization, by leading to an interference situation that cannot be mitigated by coordination (due to the ubiquitous nature of DBS consumer earth stations). Given the Commission's preliminary conclusion that any such allocation would not be effective until 2007 in

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[26] NPRM at 12.

any case, there is ample time and opportunity to thoroughly study these sharing issues.

SkyBridge applauds the Commission's recognition of the feasibility of sharing between FS stations and non-ubiquitous satellite earth station "gateways." In implementing this policy, SkyBridge urges the Commission to maintain the flexible approach it proposes in the NPRM to ensure that, in protecting FS expansion, unnecessary constraints are not placed upon satellite operators.

Respectfully submitted,

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